

IADB SUSTAINABLE AGRICULTURAL PRODUCTIVITY PROGRAM (SU-L1052)
DESIGN OF AN AGRICULTURAL INFORMATION SYSTEM

DELIVERABLE 3

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EXECUTIVE SUMMARY

Having assessed the situation of the agricultural statistical system (AIS) in Suriname (See Deliverable 1) the next steps, according with the Terms of Reference were: i) update the data collection plan established in the context of operation SU-L1032, ii) outline the material, human and financial resources necessary for the data collection plan, iii) draft an institutional strengthening plan, and iv) make a preliminary prioritization of the activities necessary to develop the AIS.

After the first mission of the Reporting Consultant (RC) and following the commitments assumed, a two-days stakeholders' workshop was developed to discuss the main characteristics of the proposed AIS (mainly referred to the supply and demand of information) and the new Agricultural Census.

As far as the data collection plan is concerned, after the decision of the Government of Suriname (GoS) of undertaking a new Census of Agriculture (CA) in 2020 which will constitute the base for designing future sample surveys, the data collection plan is divided in two main stages: 1) prior to the availability of the CA data; 2) after the census data is available.

At the same time, the institutional strengthening plan is conceived based in three pillars: 1) Material resources (mainly vehicles, computational materials and inputs); 2) Staff; 3) Capacity building.

The activities will be developed in a five-years period and they will consist of the following core activities:

- a. Preparation, undertaking, processing and dissemination of the 2020 Census of Agriculture following the lines of the FAO 2020 Programme (WCA 2020);
- b. Improving the "reporting system", in operation at present, for producing current agricultural statistics at Ressort level with high periodicity (once a month or once every two months);
- c. Provision of vehicles and inputs to the LVV to strength their capabilities;
- d. Capacity building with different strategies to provide training to staff devoted to statistics both at field and headquarters' level.

The estimate budget is of around U\$S 1.6 million divided in approximately: 1.0 million for the 2020 AC; 0.6 million for institutional strengthening. Two rounds of agricultural sample surveys are estimated in U\$S 42,000.

The schedule indicates that during the first 2-3 years should be a strong emphasis in census preparation and training and after the census data is available, the efforts should concentrate in the use of the sampling frame provided by the census to design and execute the national sampling surveys.

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IADB SUSTAINABLE AGRICULTURAL PRODUCTIVITY PROGRAM (SU-L1052)

DESIGN OF AN AGRICULTURAL INFORMATION SYSTEM

I. Introduction

Component II of the Program SU-L1052 refers to the design of an Agricultural Information System in Suriname. Its objective is to strengthen the Department of Agricultural Statistics at the Ministry of Agriculture, Animal Husbandry and Fisheries (LVV) by improving its information systems and analytical capabilities.

In the framework of the Global Strategy to Improve Agricultural and Rural Statistics (GS)¹, it is desirable to elaborate a Strategic Plan for Agricultural and Rural Statistics (SPARS) or, at least, to define a medium/long term plan. One of the main conclusions of the country assessment for Suriname is the lack of coordination and strategic vision for agricultural statistics². The elaboration of a SPARS is a long way that implies frequent consultation with main stakeholders (users and producers of agricultural statistics) and should follow the guidelines produced by the Global Office of the GS³. Despite the commitment of the Department of Agricultural Statistics (DAS/LVV) and the Central Bureau of Statistics (ABS) of Suriname in advancing towards the elaboration of a SPARS in the framework of the National Strategy for Development of Statistics (NSDS), at the present stage it has been decided in consultation with stakeholders, to elaborate a medium/long term plan for agricultural statistics.

The present report comprises: a first draft of such plan including the update of the data collection plan established in the context of the operation SU-L1032, an estimation of resources needed and the corresponding institutional strengthening plan.

To ensure the appropriation of the plan by its main national actors from the earliest stages, a first two-days' workshop was developed during February 20th -21st, 2018 in Paramaribo. It was attended by 48 participants from different departments of LVV, ABS, University of Suriname (College of Agriculture) and some others institutions.

As far as the data collection plan is concerned, it is necessary to take into consideration that it has been decided to undertake a new Census of Agriculture (CA) in 2020 and the census data will constitute the base for designing future sample surveys. Therefore, the data collection plan will be divided in two main stages: 1) prior to the availability of the CA data; 2) after the census data is available.

Finally, the institutional strengthening plan is conceived based in three pillars: 1) Material resources (mainly vehicles, computational materials and inputs); 2) Staff; 3) Capacity building.

The present deliverable is organized in the following sections:

1. Stakeholders workshop on the statistical plan;
2. Stakeholders workshop on the Census of Agriculture;
3. The data collection plan;
4. Institutional strengthening plan;
5. Timetable.

¹ UNSD, WB, FAO, Sept. 2010. Report WB #56719 GLB.

² Deliverable 1, Section 2.

³ See publications at: <http://gsars.org/en/>

A summary of the main conclusions at the end of the second mission of the RC was present via tele conference in the wrap-up mission developed in Paramaribo during the week 9-13 April, 2018. The power point presentation is attached in **Annex 6**.

Finally, a draft of the logical framework was also prepared by the RC as a first input of the logical framework matrix of Component II of the Program. See **Annex 7**.

II. Elaboration of the Agricultural Statistics Plan.

1. Stakeholders workshop on the statistical plan.

The first day of the stakeholders' meeting was devoted to presenting the framework for a statistical plan and to receive inputs in order to determine the needs of information to be covered by the plan. The meeting developed according to the following program, (the agenda is presented in **Annex 1**):

- a) presentation of the Global Strategy;
- b) presentation of the implementation plan of the Global Strategy (Action Plan);
- c) assessment of the situation of agricultural and rural statistics in Suriname based on the "Country Assessment Questionnaire" filled during the first mission of the Reporting Consultant (RC);
- d) conformation of thematic working groups for confronting needs and the availability of agricultural statistics in the country;
- e) conclusions and inputs from the different thematic groups.

The presentations are depicted in **Annex 2**.

Four groups of stakeholders were finally formed:

Group 1: Crops;

Group 2: Livestock;

Group 3: Fisheries and aquaculture;

Group 4; Environment,

Following a brief presentation of main available data and its sources of information (See **Annex 2**) each group presented its conclusions about strengths and weaknesses of the present situation of agricultural statistics including the demands of information. The conclusions are summarized in Table 1. The RC added, into the table, his suggestions about the mechanism to collect the required information: RS (reporting system); AR (administrative registers); AC (agricultural census); SS (sample survey).

Table 1. Gaps of information and strengths and weaknesses reported by main stakeholders

Group	Available information	Additional information required	Strengths	Weaknesses
Crops	<ul style="list-style-type: none"> • Production, • Planted area, • Land use, • Prices, • Import & export. 	<ol style="list-style-type: none"> 1. Data on use of fertilizers and pesticides by type at Ressort level. (RS, SS, AC) 2. Type of soil where crops are grown. (RS, AC) 	Main crops are covered with available data.	Although the form to be filled at Ressort level contemplates data on fertilizers and pesticides, they are not reported.
Livestock	<ul style="list-style-type: none"> • Production, • Prices, • Production of animal feed, • Import & export, 	<ol style="list-style-type: none"> 1. More information on animal feed. (RS, SS, AC) 2. information about micro-economic data at holding level (inputs (SS, AC), cost of production, sales, etc. (SS)) 3. Information needed to elaborate a typology of farmers. (SS, AC) 4. Social data like female farmers raising animals (RS, AC) or type of workers. (SS, AC) 	Main available data are reliable.	<ul style="list-style-type: none"> • Data on animal feed is very poor. • Lack of field staff. • Lack of transportation
Fisheries & Aquaculture	<ul style="list-style-type: none"> • Production, • Import & export. 	<p>a) <u>Fisheries:</u></p> <p>Data on capture and not only on capture landed, in order to produce data on fish discarded. (SS)</p> <p>b) <u>Aquaculture:</u></p> <p>Information on aquaculture activities at household level. (AC)</p>	<p>The major part of the fish produced (both from aquaculture and from fishing) is exported and there is reliable data from administrative registers.</p> <p>There is good information on landing of capture for licensed (registered) boats.</p>	The lack of personnel leads to a deterioration of the quantity and quality of reported data and it is jeopardizing the future of the sector information.

Table 1 (contd.)

Group	Available information	Additional information required	Strengths	Weaknesses
Environment	<ul style="list-style-type: none"> •Climate and natural disasters •Environment and Health •Fresh water •Energy and Minerals •Biodiversity •Waste 	<ol style="list-style-type: none"> 1.Data of amount used of non-legal pesticides (AR) or amount used of fertilizers. (RS, SS, AC) 2.Type of water used for irrigation, waste and flooding. (SS, AC) 3.Ways of financing the production. (AC) 4.Human resources devoted to environmental issues (AR). 5.Agronomical research. (AR) 6.Human nutrition (SS) 	<ol style="list-style-type: none"> i.There is a network officially established between DAS/LVV and ABS interchanging information on environmental themes. ii.There is some training of staff in most institutions related to environment. iii.There exists the “Environmental Statistics” publication edited by ABS. iv.Availability of environmental statistics is good 	<ol style="list-style-type: none"> i.There is no a formal forum of focal points to facilitated ABS access of data. ii.Environmental data at district level are not available. GIS cannot be supplied with data at lowest administrative level. iii.Processes are not documented. Training on this topic is needed. iv.Lack of interinstitutional coordination. v.Lack of statistical units inside the organizations with well trained staff. vi.Lack of awareness (especially among the youth) of environmental issues. vii.Lack of awareness of the importance of environmental data for adequate planning. viii.Lack of control. ix.Lack of preparation for natural disasters

The data collection plan presented below (Section 3) takes the demands of additional information defined by main users and incorporates them to the set of variables to be included.

During the workshop, as said above, the main conclusions of the “Country Assessment” were presented.

As far as the main dimensions of statistical information is concerned, the RC assess them into the following considerations:

a) Quality of present data.

DAS/LVV considers that “the overall perception of producers of information about its quality is good (in the scoring, Suriname gets 80 points vs 51 points for the region)” (See Deliverable #1). Despite that, from the comparison with census and survey data several inconsistencies appear, some of them due to problems of definitions and concepts (see section 5 below). Therefore, two explanations are possible: either the subjective perception from the staff filling the CAQ does not correspond with reality or the concept of “quality” was not entirely understood. On the other hand, it is very curious and draws the attention that quality is reported as good (or very good) in a context of lack of resources, lack of training, supervision etc. as clearly detailed in the “critical constraints” of the CAQ (See Deliverable #1)

b) Reliability.

The Country Assessment showed that it was considered as “reliable” (from a scale of “highly reliable”; “reliable”; “acceptable”; “workable”; “unacceptable”) the information related to: quantity produced for main crops, livestock and fishery; animal feed in quantity and value; exports in quantity and all the information coming from the agricultural census 2008-2009. There were no answers for the rest of variables investigated through the CAQ: value of crop production, livestock and fishery, crop yields and area planted and value of external trade. In some way, such absence of responses clarifies the previous point in the sense that quality of current data is not as good as presented in the overall perception of stakeholders.

c) Level of disaggregation.

As the main variables are reported from the field from extensionists at Ressort level, decision-makers have the information at the minimum level of administrative disaggregation. This is seen as a strength of the system.

d) Frequency.

Data are reported monthly but the information flows to DAS annually and ABS published it in the “Environmental Statistics” book biennially. This is another aspect to correct. Stakeholders and general public need a more frequent dissemination of data.

e) Availability.

From Table 1 above and upon the confrontation with the core items advocated by the Global Strategy (See Deliverable#1, Table 2) the weakest dimensions are: environmental variables and also economic variables referred to fisheries and also agro-processing.

f) Opportunity

See point d): the opportunity is good internally at MAHFF level but mains stakeholders and general public need more frequent dissemination of agricultural data.

2. Stakeholders workshop on the next Agricultural Census.

Following the decision of the Government of Suriname through the Ministry of Agriculture, Animal Husbandry and Fisheries (LVV) of undertaking a new Census of Agriculture in the second semester of 2020, the RC in consultation with the Director of DAS/LVV organized the first users-producers workshop on it. This type of meetings is advocated by the Food and Agriculture Organization (FAO) of United Nations (UN)⁴.

⁴ See, for example: World Programme for the Census of Agriculture 2020, Volume 2, FAO, Rome 2018

The second day, the workshop was dedicated to present the new FAO Census Programme 2020 (WCA 2020), to discuss the census methodology and received inputs from attendants about variables and items to include in the next census. These workshops are aimed to give ownership on census planning and scope and to adapt the contents of the census questionnaires to national needs. This one should be the first workshop of this type and a second users-producers meeting need to be planned once the census preparatory activities start.

The meeting developed according to the following program, (the agenda is presented in **Annex 3**):

- a) General presentation of the FAO WCA 2020 Programme;
- b) Methodological considerations of the new Programme;
- c) Conformation of thematic working groups. Originally 6 working groups were foreseen, finally the groups were the same as the first day ones. To this end, the census themes were grouped into the following:
 - i. Environmental themes (covering Theme 15: Environment/GHG emissions; Theme 6: Agricultural practices);
 - ii. Livestock (Theme 5: Livestock);
 - iii. Crops (Theme 4: Crops; Theme 3: Irrigation);
 - iv. Fisheries and aquaculture (Theme 12: Aquaculture; Theme 14: Fisheries).

The groups also discussed the establishment of a new threshold and raised a special concern referred to not losing information of households with agricultural activities below the threshold.

Presentations are in **Annex 4**.

Main conclusions/suggestions were:

Group #1: Environmental themes.

- a) Suggestions for the questionnaire regarding Agriculture and referred to environmental issues:
 - i. Use of pesticides: “Yes” or “No”. If “Yes”, what type of pesticides? Organic or Chemical;
 - ii. Are the restrictions followed on the use of pesticide? “Yes” or “No”;
 - iii. What is being done with the packing materials of pesticides? Burned, buried or thrown away as waste;
 - iv. How are pesticides being stored?
 - v. Do they burn the paddy husks (hulls) after the milling of the rice?
 - vi. Do they use fumigant tablets for the storage of the rice paddy?
- b) Suggestions for Livestock variables referred to environmental themes:
 - i. What’s the daily production of manure from the livestock? Enteric fermentation? Manure storage?
 - ii. Is there processing of production waste (feathers, intestines, bones etc.)? If so, how is it being processed?
 - iii. Do they suffer any effects from agriculture activities in their area? “Yes” or “No”. If “Yes”, what do they suffer from? Flies, burning of rice husks, flooding or stench;

Comment: The processors should also be included to mark the GHG, for example the fish smokehouses and the burning of the rice husks in the rice sector.

Group #2: Livestock.

Suggestions/ remarks:

- i. Digital requirements of data;

- ii. Include type of feed for all types of animals;
- iii. Include gender and age of livestock raisers in the screening form;
- iv. Define the threshold for the census in a later phase.

Group #3: Crops.

Suggestions/ remarks:

- i. Specification of crops below the threshold of < 200 m² (screening form);
- ii. Include greenhouse cultivation in the screening form with a minimum criteria of 100 m²;
- iii. Include greenhouse cultivation in the questionnaire with questions regarding type of crops, acreage, type of greenhouse, cultivation method and irrigation method.

Group #4: Fisheries and aquaculture.

No remarks regarding aquaculture because of the absence of aquaculture specialists at the workshop. Fisheries should not be included in the census.

As far as the census methodology is concerned, the group acknowledge the convenience of maintaining the same criteria of the past agricultural census: complete enumeration of the coastal area, sampling enumeration for Greater Paramaribo and the Interior. In all cases by means of PAPI (Paper and Pencil) collection method. The latter because of the general agreement that field staff is not conversant with electronic devices to take information from holders added to the fact of poor wireless communication in several parts of the country.

3. The data collection plan.

The data collection plan should take into consideration, at least, the following considerations:

- 1) The obsolescence of the sampling frame provided by the 2008/2009 Census of Agriculture;
- 2) The need of updating the "System of Agricultural Statistics for Suriname (SAIS)" elaborated from the sampling frame provided by the 2008/2009 Census of Agriculture and used in the surveys rounds taken in 2009 and 2014.
- 3) The undertaking of a new Census of Agriculture in 2020;
- 4) The need of information at lowest administrative levels like Ressorts;
- 5) The agricultural information now available;
- 6) The need of improving the quality of agricultural statistics;
- 7) The incorporation of new variables/themes to fill the gaps identified in the stakeholders' workshop.
- 8) The increased use of satellite imagery and Geographic Information Systems to support agricultural surveys

Given such prerequisites, the data collection plan is divided in two parts: 1) Until data from the new Agricultural Census is available; 2) From availability of the sampling frame provided by the 2020 AC onwards.

3.1.Data collection plan prior to the availability of the new sampling frame (aprox. 2021).

3.1.1. Present situation

At present current agricultural data comes mainly from the reporting system based on agronomists in the field. It provides monthly data at Ressort level. However, the quantity of data available should be adjusted as shown in Table 1 above. At the same time, there is neither supervision of the work in the field nor training of the field staff related to the information to provide. The fieldwork should be supervised and assessed by DAS/LVV.

Other annual information comes from administrative registers and private sources.

Once a new sampling frame is available the overall quality at national level should be evaluated by estimates coming from probabilistic sample surveys. It is advisable to maintain the present reporting system in both stages of the plan (prior and posterior to the census frame) because it is the only way to have estimates at the lowest administrative level. Nevertheless, several measures need to be taken to improve the work of the reporting staff in the field. Such improvement should be part of the institutional strengthening covered by the present program (See 3.1.2 below).

At present, the information about crops and livestock is based in a network of informants in the field. LVV Agronomists (extensionists) at Ressort level in the coastal area fill a standard form that is sent to regional offices. Yearly DAS/LVV compiles the information which is made available biennially for ABS through the publication: "Environment Statistics" ("Milieu Statisteken").

The following current **agricultural statistics** are regularly produced and published in the Chapter "Land use and agriculture"⁵:

- Planted area of crops and land use per district (in has), annual output by type of crop:
 - Annual crops reported:
 - Paddy;
 - Maize;
 - Cassava;
 - Other roots (sweet potatoes, pomtayer, chinese tayer and napi)
 - Peanuts;
 - Beans;
 - Other pulses (soybean, capuchins, sebijari);
 - Vegetables (tomato, string beans, green beans, tayerblad, amsoi, kay choi and pak choi, boulanger, cucumber, pepper, pumpkin, sopropo, okra, antroewa and others vegetables)
 - Semi-perennial crops:
 - Banana;
 - Plantain;
 - Pineapple;
 - Passion fruit;
 - Papaya.
 - Perennial crops:
 - Coconut;
 - Orange;
 - Grapefruit;
 - Pink grapefruit;
 - Other citrus (mandarin, lime, tangelo, lemon, curacaose orange, yellow and red king);
 - Avocado;
 - Mango;
 - Cherry;
 - Other perennial crops (cacao, coffee, soursop, guava, sapotille, knippa, pomme de cythere, curacaose apple, olives, breadfruit, cashew, tamarind, mope, noni, miramble, rambutan, pomerac and star apple).
- Livestock: grassland (in has) and number of animals by type:

⁵ From the last issue of "Environment Statistics", December 2016.

- Cattle;
- Pigs,
- Goats and sheep,
- Other (Water buffaloes, horses, donkeys, mules).
- Poultry

LVV also manages information from the field (collected through the reporting system) on milk yield per cow per day, average lactation period per cow and end-use of milk (to milk centers, to elsewhere, for own use and for feeding calves).

Besides, from administrative records, export of rice, banana and flowers are regularly published. Also, from administrative records imports of fertilizers and pesticides are reported.

The Foundation of Forest Management and Production Control produces information about **forestry** which is also available in the “Environment Statistics” publication on:

- Total land area and forest area;
- Total area post-deforestation, land use/land cover;
- Existing forest types (in has);
- Protected area as percentage of the total land area;
- Total Round-wood production by district;
- Industrial Round-wood production for major species in m³;
- Timber export by Assortment;
- Number of registered saw mills per district;
- Timber cutting licenses and total area covered (in has);
- Total land disturbances by Rosebel goldmines;
- Mined-out and rehabilitated bauxite area in Coertibo.

Information about **fisheries** is produced by Suriname Fisheries Services, Department of Fisheries (LVV) on:

- Fish catches by type of fishery (in tons);
- Average number of days at sea;
- Number of boats by type of fishery;
- Number of license holders by boat type;
- Export of fish, shellfish and mollusk (in tons);

There is no available information on current production of **aquaculture**.

Total Gross Production Value is computed by the National Accounts Division of ABS from agricultural prices provided by LVV and other sources.

3.1.2. Recommendations about data collection in the period prior to the availability of the new sampling frame.

1. The present list of reported variables should be maintained;
2. According to the output of the stakeholder meeting, the following information need to be produced in addition to the previous list:
 - a. Use of fertilizers and pesticides by type (This information is asked in the monthly report but it is not published)
 - b. Type of soil where crops are grown (it should be added to the form);
 - c. Type of animal feed by specie of animal. In the present form, the total consumption of animal feed by type of animal (cattle, poultry, other) is reported but the type of animal feed by type of animal should be added to the form;

- d. Sex of the holder raising animals (the total number of holders by sex in the Ressort could be reported in the form, the sex of each holder will be a question in the Agricultural Census, national estimates would be provided by sample surveys).
- 3. In the framework of the institutional strengthening actions under the Program, DAS/LVV is being equipped with vehicles and several inputs for travelling to the field. One important activity is the visit to the Ressorts to train and supervise the extensionists responsible for filling the forms. It is recommended to visit each Ressort twice a year in order to:
 - a. Check in the field the information provided. To this end, it is advisable to contact main referents of agricultural production in the area such as: main holders, providers of agricultural inputs, cooperatives and other institutions that know the agricultural situation to have their opinion about reported figures;
 - b. Train the field personnel in the main concepts and definitions included in the form;
 - c. Discuss with field personnel eventual changes or improvements in the way that the information is being collected;
 - d. Discuss with other stakeholders in the area about the way the information is being collected and their relationship with field personnel responsible for filling the forms;
 - e. Inform the extensionists on the final figures processed in order to make a return that will increase their involvement in the task.

3.1.3. Estimated budget

According to the overall estimation of the budget for all activities to be covered for the Program (See **Annex 5**) the visits to the field once the vehicles are bought would cost around U\$S 9,000 (nine thousand US dollars) for the total duration of the program (Item C4 in the budget and apportionment of item C.3.1.2) according to the following:

- Travel: U\$S 5000
- Materials: U\$S 1000
- Fuel (apportionment of item C3.1.2 in the budget: aprox. 2500 liters): U\$S 3000

According with the timetable (**Annex 5**), materials would be purchased during the first quarter and the rest of inputs would be spent at a constant amount of U\$S 250 per quarter for travel and U\$S 150 per quarter for fuel/oil.

3.2. Data collection plan after the availability of the new sampling frame (aprox. 2021).

3.2.1. Planned situation.

Once the data coming from the Agricultural Census is ready, a new sampling frame will be available. For the coastal area, the complete enumeration of holdings will enable to take probabilistic sampling surveys. The main advantage of these surveys is that they allow the estimation of statistical errors. Therefore, point estimates of area, production, yield, livestock, etc. will be accompanied of a measure of such errors. At the same time, the estimates can be obtained at lower cost than a complete enumeration operation. More than that, efficiency can be improved either obtaining pre-established sampling errors (in terms of confidence intervals or coefficient of variation) for a given cost or the cost for a given accuracy. The main handicap of sampling surveys is that they do not give estimates for small areas (like Ressorts) because of costs considerations.

Therefore, a mixed procedure is advisable: 1. To maintain the reporting system to have approximations to the values of parameters on a continuous base at Ressort level (required mainly decision-makers and other users of information); 2. to have annual sampling surveys (the Program will cover only two annual surveys at an estimate cost of U\$S 21,000 (twenty one thousand US dollars) per survey) to be used as benchmarks for reconciliation of data coming from the reporting system. Values of parameters coming from the reporting system are at Ressort level. Upon aggregation of

such data one is able to have information at district and national level, at the same time, sample surveys will provide estimates at country level. At that stage, reconciliation is possible upon comparison of national data vs the aggregation of data reported from the field on a continuous basis.

Therefore, this data collection plan is efficient in the sense that there is a scientific procedure of estimation for main parameters and, at the same time, decision-makers have reported data (in some way “subjective data” because come from the opinion of the extensionists in the field) at the disaggregation level they need and upon reconciliation of data they can be corrected/improved.

Not all variables would be covered by sampling surveys in some cases administrative registers can be used instead (Table 2).

Table 2 depicts the proposal of data collection procedures once the system is functioning with all its components (the “census” and “after census period”). In the time table (see **Annex 5**) the two surveys covered by the Program are foreseen for the first semester of 2022 and the first semester of 2023.

Table 2. Proposal of data collection instruments for the period after the agricultural census.

VARIABLE	METHOD OF DATA COLLECTION				Remarks
	Reporting system	Sample survey	Admin. Records	Census of Agriculture	
General:					
-Main characteristics of holdings and holders	X	X		X	
-Land use		X		X	
-Land tenure		X		X	
-Work on holding		X		X	
-Cost of production		X			
-Financing		X		X	
Crops:					
-Annual crops:					
-Planted area	X	X		X	
-Production	X	X			
-Land use	X	X		X	
-Type of soil by crop	X	X		X	
-Area irrigated		X		X	
-Type of water for irrigation		X		X	
-Fertilizers used by type/crop	X	X		X	
-Pesticides used by type/crop		X		X	
-Prices			X		Prices should come from market information and administrative records.
-Import & export			X		
-Greenhouses				X	
-Small plots				X	Plots below the threshold should be taken in the screening form
-Permanent&semi-permanent crops:					
-Planted area in compact plantation	X	X		X	

VARIABLE	METHOD OF DATA COLLECTION				Remarks
	Reporting system	Sample survey	Admin. Records	Census of Agriculture	
-Number of scattered trees	X	X		X	
-Production	X	X			
-Land use	X	X		X	
-Fertilizers used by type/crop	X	X		X	
-Pesticides used by type/crop		X		X	
-Prices			X		Same observation as above
-Import & export			X		
Livestock:					
- Stock by type	X	X		X	
-Production of milk and dairy products	X	X		X	
-Other animal productions	X	X		X	
-Production of feed		X		X	
-Type of feed	X	X		X	
-Treatment of manure				X	
-Prices			X		Same observation as above
Aquaculture:					
- Area of ponds		X			
-Type of water		X			
-Species		X			
-Feed		X			
Fisheries:					
-Fish capture		X			
-Fish catches by type of fishery		X	X		
- Number of days at sea		X	X		
-Number of boats by type of fishery			X		
-Number of licensed holders by boat type			X		
-Export of fish, shellfish & mollusk			X		
Forestry	Like at present, See 3.1.1.				

4. The 2020 Census of Agriculture

The last Agricultural Census was undertaken during November-December 2008 and January-February 2009. Following international recommendations and given the structural changes in the agricultural sector in Suriname it has been decided to undertake a new Census of Agriculture during the second semester of 2020.

The new census, which is a core part of the Program, should start its preparation as soon as possible once the loan is approved. The census will be undertaken on the framework of the FAO World Census Program 2020 (WCA2020) and, in principle would be developed with the same methodology and similar scope as the past Agricultural Census (2008/2009): complete enumeration of the coastal area and a probabilistic survey for Greater Paramaribo and the Interior. It was also agreed to continue with the use of PAPI (Paper and Pencil) method of data collection because it was acknowledged that the census field staff is not conversant with the use of electronic devices for questionnaire filling. It has been also agreed with national authorities that a census steering committee will be established to discuss questionnaire content, tabulation plan, dissemination and publicity and other operative aspects of the new census as well inter-institutional coordination. Based on the last census budget and assuming the same characteristics as before, the total budget for the census is estimated approximately in U\$S 1,000,000 (one million US dollars). See **Annex 5**.

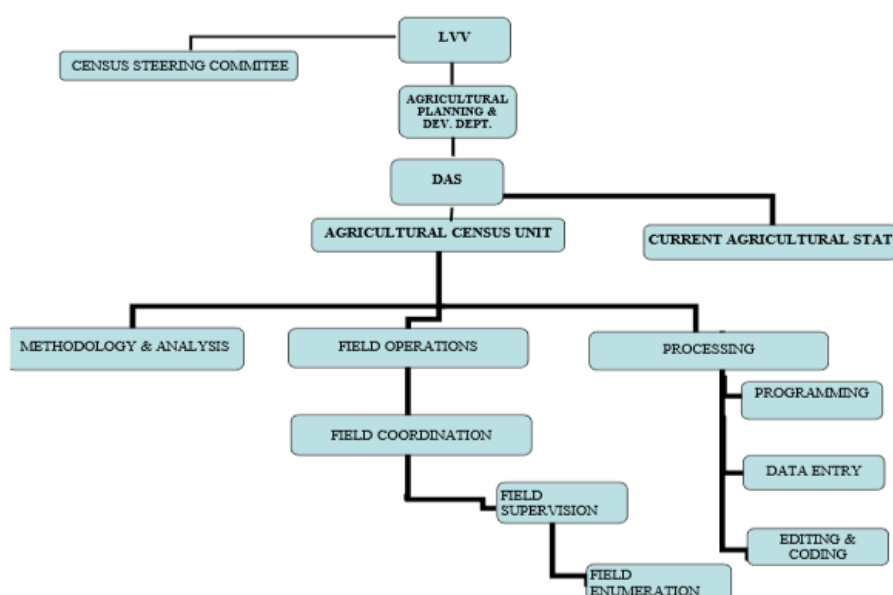
The first step for initiating census activities should be the passing of a census law following the lines of the Law approved for the past census in August 2008.

As far as the census organization is concerned, a census unit need to be formed at LVV and a census steering committee established.

It is foreseen that FAO could provide Technical Assistance by means of an Unilateral trust Fund (UTF) . An overall amount is also budgeted for it.

The following chart depicts the foreseen census organization and it has been the basis for budgeting.

Chart 1. Proposed census organization



Specifically, the census staff should comprise:

1. **Census Coordinator (“Census Leader”)**. High level professional on a full-time basis for two years;
2. **Deputy Census Coordinator** on a part-time basis to substitute the Census Leader when needed;
3. **One statistician as head of Methodology and Analysis section** for 1 year on a full-time basis;
4. **One Field Coordinator** for six months full-time and six months part-time;
5. **One assistant of Field Coordinator** for six months full-time and six months part-time
6. **Three field coordinators at Ressort level** in the Coastal Area (present LVV personnel in the field), full time for two months;
7. **One field coordinator for the Interior** (present LVV personnel in the field) for two months on a full-time basis;
8. **One chief of the processing unit** for one year on a full-time basis;
9. **One Administrator** on a par-time basis for two years
10. **One Secretary** full-time for two years
11. **20 editors/coders** for two months full-time
12. **20 keyers** for two months full-time
13. **6 editors/coders supervisors** for one year full-time;
14. **240 field enumerators** for 45 days of enumeration;
15. **60 field supervisors** for 60 days.
16. **14 Ressort leaders** for 60 days.

According to the WCA2020⁶ and the long experience in undertaking of census of agriculture the main steps in developing the census of agriculture are:

- Preliminary activities
 - Determine the overall strategy for the agricultural census as part of the system of integrated agricultural censuses and surveys;
 - Define the objectives of the agricultural census;
 - Develop a work plan and budget for developing and carrying out the census;
 - Prepare census legislation, if required;
 - Form a National Census Committee to oversee the census;
 - Develop and implement the census publicity campaign;
 - Create the Agricultural Census Office and recruit the necessary staff;
 - Design data quality assurance framework;
 - Prepare frames;
 - Prepare maps for census field operations;
 - Develop the tabulation plan;
 - Design and test questionnaires;

⁶ World Programme for the Census of Agriculture 2020, Chapter 6, page 49.

- Design and test the computer processing system, including data entry, editing and tabulation;
- Prepare field instruction manuals;
- Develop the field system; recruit and train field staff;
- Field work
 - Conduct census enumeration;
- Post census
 - Carry out post-enumeration survey;
 - Perform data processing;
 - Tabulate and analyze the data;
 - Prepare census reports and disseminate results;
 - Reconcile the data from the system of current statistics with the census data.

5. Institutional strengthening plan

5.1. Present situation.

Institutionally the country assessment showed lack of coordination between institutions responsible for the National Statistical System like ABS, DAS/LVV, Department of Animal Husbandry/LVV, Department of Fisheries/LVV and the Foundation for Forest Management and Production Control.

On the other hand, there is lack of vehicles for statistical and other activities and, also, at present, there is no fuel for mobilizing the few existing transport means.

Finally, another weakness to highlight is that upon comparison of data published from the current statistics (based on the reporting system from the field) and census and survey data several important inconsistencies appear. For example:

Number of poultry: 2008-2009 Agricultural census: 491,328

Number of poultry: 2014 Sample survey: 355,794

Poultry: Environmental Statistics book ed. 2016, year 2011: 5,694,000

Upon requesting information about this enormous difference in head of poultry the answer was that the figure in the Environmental publication refers to the accumulated number month by month (which is coherent with an average monthly figure of around 470,000 heads), but if this is the case, there is a high mistake in taken a stock variable as a flux variable.

In other cases, there is no explanation for the differences, for example:

Total area with semi-permanent crops in the census 4,317 has vs 2,509 has in 2011 for the Environmental Statistics book

Total area with permanent crops: census 735 has; 2014 agricultural survey, 782 has; Environmental Statistics publication, for 2011: 2,337 has.

Total area with banana: census 3,898 has, Environmental Statistics, for 2011: 2,044

As far as the staffing is concerned, the lack of professional and technical staff and their training are mentioned, in the Country Assessment Questionnaire, as critical constraints for developing the activities. Therefore, the dotation of personnel and the capacity building should be important aspects of the strengthening of capabilities. Because of the restrictions for incorporating new staff in the public offices, a good alternative, should be the identification of

present staff available in other offices to be assigned to statistical activities after a rigorous training to be covered by the program. Apart from the personnel specifically assigned to census activities, it is foreseen that DAS/LVV should be reinforced with one statistician with profile in statistical methods and data analysis on a full-time basis. This person need to be specifically trained in use of remote sensing and GIS for statistical activities.

5.2.Planned situation

From the previous considerations it is suggested that the program contemplates mainly:

- a. Provision of new vehicles for field work;
- b. Provision of fuel and other inputs (insurance, provision for maintenance) for transport;
- c. Provision and update of computing equipment and software both at headquarters and at field offices;
- d. Capacity building.

a. Vehicles.

It is necessary to overcome the present situation about the lack of field transportation and it is proposed to buy or rent (the most convenient):

- One four-wheel drive pickup or similar for use of DAS/LVV;
- Two motorcycles per Ressort, 28 motorcycles in total to give mobilization to field personnel at Ressort level;
- Seven four-wheel drive pickups or similar for the census operations remaining, if bought, for use of statistical activities of LVV after the census.

Budget for vehicles to reinforce Ressort capabilities amount U\$S 79,600 and at headquarters In Paramaribo another U\$S 346,308. Therefore, the total budget for vehicles is estimated in U\$S 425,908. (See **Annex 5**, Items C2 and C3)

b. Other inputs.

Because of the present critical situation about the provision of fuel and funds for maintenance and insurances, these items are also budgeted in U\$S 110,908 in total (U\$S 44,600 at Ressort level and U\$S 66,308 for Headquarters) (See **Annex 5**, items C2.1.2, C2.1.3, C2.1.4 and C3.1.2, C3.1.3, C3.1.4).

c. Computational equipment.

It is necessary to provide and update the computational equipment in terms of hardware and software both at headquarters' and Ressorts' level. The budget contemplates the following equipment:

- At Ressort level:
 - i. 14 desktops with accessories;
 - ii. 14 printers;
 - iii. 14 GPS devices;
 - iv. Cartridges, maintenance and stationery.

• At Headquarters:

- i. 15 desktops with accessories (UPS included) (to substitute the ones bought for the last census)
- ii. 14 laptops (7 for the census unit);
- iii. 2 UPS batteries;
- iv. 2 servers;
- v. 1 printer;
- vi. 1 scanner;
- vii. 2 GPS devices;
- viii. GIS software
- ix. 1 copy machine;
- x. Accessories, licenses, maintenance and stationery (including the purchase of satellite imagery)

Incorporation of satellite imagery in Geographic Information Systems would improve national statistics by means of direct estimation of areas and as a sampling frame for surveys based on area frames or multiple frames. At present, forestry statistics produced by the Foundation of Forest Management and Production Control for some parameters like forest area and deforestation are based on that remote information. However, specific training is needed and the budget included in the UTF will contemplate this activity because satellite imagery is important when using the census of agriculture as master frame for agricultural and rural surveys⁷ Most likely the supply of imagery will not constitute an issue but this topic should be investigated during the development of the program.

The strengthening in computational equipment is budgeted in U\$S 117,450 (U\$S 35,550 at Ressort level (See **Annex 5**, item C.2.2) and 81,950 for HQ (See Annex 5, items C.3.2 and C.4).

d. Training.

Capacity building is crucial for institutional strengthening. Three modalities of training are suggested and have been discussed with DAS/LVV:

- i. On-job training;
 - ii. In country training
 - iii. Abroad training.
- i. The improvement of the present reporting system has an important component of on-job training likewise the census preparation and census taking.
 - ii. Private companies and/or national universities can provide in-country training mainly in the use of computing software and data analysis. In particular, training on Geographic Information Systems and Remote Sensing.
 - iii. In the framework of the Implementation of the “Global Strategy to improve agricultural and rural statistics” (UNSD, WB & FAO, 2010), FAO (along with FLACSO) is organizing

⁷ FAO, WCA 2020, §3.39 page 21 and § 4.43 page 30

short regional courses on statistical applied methods. The Caribbean region, should be reached with courses in English in 2019. Participation of staff assigned to statistics appears as a valuable training instance.

As far as the budget for this component is concerned: “On-job” training has no additional cost; “In country” training (mainly in use of computing software and data analysis) in some local institution is estimated in U\$S 21,000; “Training abroad” (mainly in statistical methods and analysis): would have an approximate cost of U\$S 12,000. (See Annex 5, items C1).

Preliminary prioritization of activities

The first 2-3 years of the Program should be devoted to the preparation and undertaking of the new Agricultural Census. Given the outlined limitations of staff, most of the time should be devoted to these activities. In parallel, the improvement of the present reporting system to obtaining data at the lowest administrative level should be performed by using the vehicles and materials provided by the Program as part of the institutional strengthening component. Once census data is available, a Master Sampling Frame and a farm directory will be available. At this stage, the design of sampling and the organization of sample surveys should start. It is advisable to maintain the reporting system (improved) also in such post-census stages in order to providing data at Ressort level and on a monthly (or two-months) periodicity. The suggested time-table of activities is presented in Fig. 1.

Figure 1.

Tentative Schedule (by quarter)

Activity	2018		2019				2020				2021				2022				2023	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A1 Census preparations																				
A2 Pilot Survey																				
A3 Execution of census in coastal plain										Fw										
A4 Post Enumeration Survey in coastal plain											Fw									
A5 Execution of census in interior										Fw										
A6 Execution of census in Paramaribo										Fw										
A7 Post Enumeration Survey in Paramaribo											Fw									
A8 Media campaign for the census																				
A9 Data processing																				
A10 Material acquisitions for field work																				
A11 Payment of fees (CU, LVV staff, field staff)																				
A12 FAO TA										w/b						w/b				
A13 Thematic analysis and dissemination																				
B1 Sampling Survey I																				
B2 Sampling Survey II																				
C1 Training in stat, computing, etc.			Ab			Ab			Ab											
C2.1 Vehicles to reinforce Ressort offices																				
C2.2 Computers and similar to reinforce Ressort offices																				
C3.1 Vehicles to reinforce DAS/LVV																				
C3.2 Computers and similar to reinforce DAS/LVV																				
C4 Additional improvement of reporting system																				

Notes: "Fw" means "Field work" and "Ab", "training abroad"; "w/b" means "without budget" because it is assumed that the complete disbursement was made at the beginning of the FAO Project.

ANNEX 1

Agenda for the first day of the stakeholders meeting

Ministry of Agriculture, Animal husbandry and Fisheries in collaboration with the Inter-American Development Bank

Programme schedule Data Users-Producers of Agricultural Statistics Workshops

Tuesday February 20, 2018 08.00 – 16.00 hours SAIS building

08.00 – 08.30 Registration

08.30 – 08.45 Opening remarks
(Deputy Director Planning, Raymon Nojodimedjo)

08.45 – 09.00 Presentation of the IDB Project
(Miguel Galmes, IDB Consultant)

Part I – The Global Strategy and its implementation.

09.00 – 09.30 The Global Strategy for Improving Agricultural and Rural Statistics
(Miguel Galmes, IDB Consultant)

09.30 – 09.45 Discussion

09.45 – 10.00 Coffee break

10.00 – 10.30 The Implementation Plan of the Global Strategy
(Miguel Galmes, IDB Consultant)

10.30 – 10.45 Discussion

Part II – The Suriname's Assessment

10.45 – 11.15 Main results of the assessment of agriculture statistics in Suriname
(Miguel Galmes, IDB Consultant)

11.15 – 11.30 Summary of responses to the forms about supply and demand of agriculture statistics filled by participants (Sheila Aldjah, Division Agricultural Statistics)

11.30 – 12.00 Discussion

12.00 – 13.00 Lunch Break

Part III- Working groups

13.00 – 13.30 Conformation of 6 working groups to work on proposals to improve sector statistics and coordination: Crops, Livestock, Aquaculture and Fisheries, Forestry, Environment and water issues, Rural development.

13.30 – 15.00 Group discussions

15.00 – 15.30 Presentation of conclusions for each group

15.30 – 16.00 Discussion about the establishment of a formal permanent forum

ANNEX 2

Presentations Day 1.

- A. [Action Plan presentation Suriname draft workshop](#)
- B. [Global Strategy pres Suriname draft workshop](#)
- C.

Available data and sources of Agriculture Statistics

- Crops
Available data: Production, planted area and landuse, prices, import & export
Sources: Ministry of Agriculture, General Bureau of Statistics, AGRON, Ministerie PH, Asycuda
- Livestock/ Poultry
Available data: Production, prices, import & export, production of animal feed
Sources: Ministry of Agriculture, general Bureau of Statistics, Asycuda

- D.



ANNEX 3

Agenda for the second day of the stakeholders meeting

08.00 – 08.30 Registration

Part I – The new FAO World Census Programme

08.30 – 09.00 The World Census Programme 2020
(Miguel Galmes, IDB Consultant)

09.00 – 09.15 Discussion

Part II – The next Agricultural Census in Suriname.

09.15 – 10.00 A proposal for the next Agricultural Census in Suriname
(Miguel Galmes, IDB Consultant)

10.00 – 10.30 Discussion

10.30 – 10.45 Coffee break

10.45 – 11.15 Conformation of 6 working groups to propose questionnaire contents and tabulation plans: a) Identification and main characteristics of agricultural holdings, b) Crops, c) Livestock, d) Agricultural practices, services for agriculture, environment/ greenhouse emissions, e) Demographic and social characteristics, work on holding, food security, f) Aquaculture, forestry, fisheries.

11.15 – 12.15 Lunch break

12.15 – 14.15 Group discussions

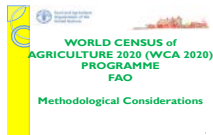
14.15 – 14.45 Presentation of conclusions for each group

14.45 – 15.00 Closing remarks

ANNEX 4

Presentations Day 2.

- A. [World Census of Agriculture 2020 Programme \(WCA 2020\) Overview](#)
- B.



ANNEX 5
Preliminary budget and time-table

[Revised budget for final mission 09042018](#)

ANNEX 6
Presentation April 9th, 2018

[IADB Sustainable Agricultural Productivity Program \(SU-L1052\)](#)

ANNEX 7
[Draft Logical Framework](#)

ANNEX 8
List of persons contacted

- Raymon Nohodimedjo. Director of Planning LVV
- Sheila Aldjah – DAS/LVV
- Lily Wonsowinangoen – DAS/LVV
- Anjali Kisoensingh - ABS
- Luis Hernando Hintze - IADB
- Hector Valdés Conroy - IADB
- Steven Romeo Hofwijks - IADB